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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/866,145	05/25/2001	Richard Alan Haase		4449

7590 09/30/2004

Mr Richard Haase  
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Missouri City, TX 77459

EXAMINER

BARRY, CHESTER T

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 09/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/866,145	Applicant(s) HASSE, RICHARD ALAN	
	Examiner Chester T. Barry	Art Unit 1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13, 15-21 and 39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-21 and 39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/13/04</u> . | 6) <input type="checkbox"/> Other: _____  |

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IDS

The EPA Project Summary listed on the IDS filed 7/13/04, i.e., "Effect of Recycling . . . ,"  
has not been considered because the copy filed with the IDS was illegible.

The Browner speech is not probative of the state of the art at the time the invention was made because the speech was delivered on 10/17/1997, after applicant's effective filing date of 9/26/1996. Accordingly, applicant's arguments, if any, based on this reference alone are unpersuasive.

Similarly, the Novak and Bivins article is not probative of the state of the art at the time the invention was made because the article was published in 2000, after applicant's effective filing date of 9/26/1996. Accordingly, applicant's arguments, if any, based on this reference alone are unpersuasive.

Similarly, the EPA Clean Water Act article is not probative of the state of the art at the time the invention was made because the web-based article was "last updated" in Feb. 2003, after applicant's effective filing date of 9/26/1996. Accordingly, applicant's arguments, if any, based on this reference alone are unpersuasive.

Similarly, the Sierra Club article about the 30<sup>th</sup> Anniversary of the Clean Water Act article is not probative of the state of the art at the time the invention was made because the only discernible date of that article was 7/2/04, after applicant's effective filing date

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of 9/26/1996. Accordingly, applicant's arguments, if any, based on this reference alone are unpersuasive.

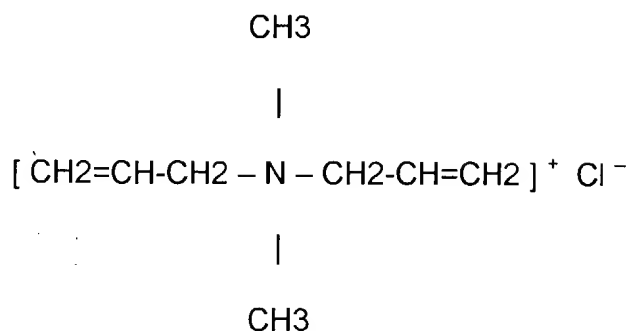
112, 2<sup>nd</sup> paragraph – “DADMAC family of compounds”

Claims 2 – 3 are rejected under 35 USC §112, second paragraph for failing to particularly point out and distinctly claim the subject matter for which patent protection is sought. In claim 2, it is unclear what a “(DADMAC) family of compounds” is because DADMAC is a unique compound. Similarly, in claim 3, it is unclear what an “(epi-DMA) family of compounds” is because epi-DMA is a unique compound.

Applicant at page 35 argues that the DADMAC “family of compounds” would cover, for example, di-allyl, di-methyl ammonium chloride compounds varying in the chain length of “the allyl” group, i.e., wherein “the allyl” group would have from 4 to 6 or 7 or 8 carbons, or differing in the alkyl groups on the amine, e.g., di-methyl amine could be methyl-methyl amine or methyl ethyl amine or ethyl methyl amine or methyl-propyl amine, and so on.

Applicant's arguments presupposes that DADMAC is a description of a genus of compounds rather than a single compound. The examiner and the applicant differ on this point. The examiner's position remains that di-allyl, di-methyl ammonium chloride is but a **single** compound. Specifically, it is a compound wherein each of the two “allyl” groups (“di-” allyl) is a 2-propenyl group bonded directly to the nitrogen of the nitrogen atom of the ammonium group, as shown below:

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Moreover, if DADMAC meant di-allyl di-**alkyl** ammonium chloride, then the abbreviation would have been DADAAC, right? Applicant himself defined DADMAC as “di-allyl di-methyl ammonium chloride.”

Similar arguments apply to the epi-DMA “family of compounds” point. The examiner’s position remains that epi-DMA stands for epichlorohydrin di **methyl** amine (see applicant’s patent for this definition as well). If epichlorohydrin di-alkyl amine were intended, the abbreviation would have been epi-DAA, right?

It is helpful, the examiner feels, to review the context in which the “DADMAC variety” and “epi-DMA variety” phrases were used in the application. What applicant said in the original application was:

Examples of polymeric quaternary ammonium compounds are the di-allyl di-methyl ammonium chloride (DADMAC) variety and the epichlorohydrin di-methyl amine (epi-DMA) variety.

The point that Applicant was making was that suitable “polymeric quaternary ammonium compounds” suitable for use in the invention come in **two** varieties, namely, firstly, the single compound di-allyl di-methyl ammonium chloride and, secondly, the compound

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epichlorohydrin di-methyl amine. This interpretation is supported by another statement

by applicant in the patent: Applicant stated:

Di-allyl di-methyl ammonium chlorides (DADMAC) and epichlorohydrin di-methyl amine (epi-DMA) are two preferred polyquaternary amines used in sludge dewatering. Both of these polyquaternary amine moieties have been found to provide sites for the dewatering of sludge from the thermophilic digestion process.

(emphasis added).

If applicant understood DADMAC to describe a genus of compounds (**plural**) and epi-DMA to describe a genus of compounds (**plural**), then he would not have referred to them as “**two** preferred polyquaternary amines” or the phrase “**both** of these polyquaternary amine moieties” (emphasis added).

In contrast, let's see how another artisan (Hassick 5035808, col 2) addressed this issue:

Any water soluble di C<sub>1</sub>–C<sub>8</sub> alkyl diallyl ammonium polymer can be used with ferric sulfate. The preferred polymers are polydimethyl diallyl ammonium chloride (polyDMAAC), polydiethyldiallyl ammonium chloride (polyDEDAAC), polydimethyl diallyl ammonium bromide (polyDMAAB) and polydiethyl diallyl ammonium bromide (polyDEDAAB). The most preferred dialkyl diallyl ammonium polymer is a homo polymer of dimethyl diallyl ammonium chloride.

The confusion of just what is meant by the “epi-DMA family of compounds” is exacerbated by Applicant's remark that “a family of compounds can be prepared by varying the alkyl groups on the amine, i.e. [sic, “e.g.,”?] di-methyl amine could be

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methyl-methyl amine or methyl-ethyl amine . . . " The confusion of this remarks suggests that "di-methyl amine" and "methyl-methyl amine" differ with respect to the alkyl group. Such is not the case: Di-methyl amine is the very same compound as methyl-methyl amine.

Attempts after the fact of preparation and filing of the application 09/055870 which matured into the patent now the subject of reissue to squeeze additional substituted ammonium chloride compounds and additional substituted di-alkyl amine compounds or epi-dialkyl amines other than epi-di-methyl amine from the stone of "polymeric quaternary ammonium compounds" is not supported by the original disclosure.

Sec. 112, first paragraph, written description

Claims 2 – 3 are rejected under 35 USC Sec.112, first paragraph, for failure of the application as filed to provide written support for a "DADMAC family of compounds" or an "epi-DMA family of compounds." As noted above, the application supports two (and only two) polymeric quaternary ammonium compounds: the di-allyl di-methyl ammonium chloride (DADMAC) variety or type of a polymeric quaternary ammonium compound, and the epichlorohydrin di-methyl amine (epi-DMA) variety or type of a polymeric quaternary ammonium compound.

Coverage for Equivalents of DADMAC and epi-DMA

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Applicant states that he wishes to be sure to cover "well known" and "easily manufactured" equivalents of DADMAC and epi-DMA. For the foregoing 35 U.S.C. Sec.112, 1<sup>st</sup> and 2<sup>nd</sup> paragraph, reasons noted immediately above, Applicant is not entitled to literal coverage of such so-called equivalents.<sup>1</sup> If such protection is available through the doctrine of equivalents, or other equitable remedy, that is a matter for an Article III court to determine, not this Art. I administrative agency.

#### New Matter

Claim 9 is rejected under 35 USC Sec. 112, first paragraph, for failure of the original specification to describe the claimed invention. The recited ratio range of 50 ppm:1 % - 350 ppm:1 % is not supported by the range of 50 ppm:1 % - 300 ppm:1 % (col 6 line 53).

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<sup>1</sup> There is no evidence of record suggesting that anything other than DADMAC, e.g., di-allyl di-ethyl ammonium chloride, di-allyl methyl ethyl ammonium chloride, or the like, is a "doctrine of equivalents" type equivalent to DADMAC. That factual question is not before this agency. Similarly, there is no evidence of record suggesting that anything other than epi-DMA, e.g., epi-di-ethyl amine, or the like, is a "doctrine of equivalents" type equivalent to epi-dimethyl amine.



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Double Patenting<sup>2</sup>

Claims 1 – 13, 15 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 – 14, 16 of U.S. Patent No. 5846435 to Haase in view of USP 3472767 to Lees.

Haase '435 patent claims	Haase reissue application claims
<p>1. A method for dewatering biological sludge that has been digested by a thermophilic digestion process comprising:</p> <p>a. adding polymeric quaternary ammonium compounds, as primary component, to the biological sludge; and</p> <p>b. adding polyacrylamide to the biological sludge; such that any combinations of the polymeric quaternary ammonium compounds and of the polyacrylamides enhance dewatering of the sludge.</p>	<p>1. A method for dewatering thermophilic biological sludge, comprising:</p> <p>a. adding a primary component to the thermophilic biological sludge; said primary component comprising at least one of aluminum sulfate and ferric chloride; wherein said primary component may also comprise a polyquaternary ammonium compound; and</p> <p>b. adding a cationic or anionic polyacrylamide to the thermophilic biological sludge.</p>

Claim 1 of the pending application optionally includes the addition of a polyquaternary ammonium compound, as required by claim 1 of the '435 patent. The differences between claim 1 of the pending reissue application and claim 1 of the '435 patent, therefore, are: 1) the former requires the addition of aluminum sulfate or ferric chloride, and 2) the polyacrylamide is ionic, i.e., either cationic or anionic. It would have been obvious to have added cationic polyacrylamide blended with aluminum sulfate or ferric chloride to the thermophilic biological sludge of the '435 patented method because USP 3472767 to Lees teaches doing so improves dewater of municipal sewage sludge. See

<sup>2</sup> This rejection may be overcome by filing an appropriate terminal disclaimer.

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Lees at col 1 lines 25-28 and col 2 lines 24-28, 52-54; example 19; col 5 lines 44, 52; col 6 lines 8-9, 16-18.

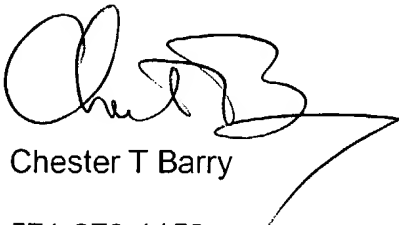
Claims 16 – 18, 21, 39 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 15 of U.S. Patent No. 5846435 to Haase in view of USP 3472767 to Lees. Claim 15 of the '435 patent is directed to a composition comprising polymeric quaternary ammonium compounds, and polyacrylamide. It would have been obvious to have combined the composition with a sludge containing thermophiles because claim 15 says the composition is intended to dewater a biological sludge that has been digested by a thermophilic digestion process. It is well known that sludge contains solids and water. The difference between claim 15 of the patent and pending claim 16 is aluminum sulfate. Per claims 16 and 21, it would have been obvious to have added aluminum sulfate to the composition prior to its addition to the digested sludge because Lees '767 teaches a synergistic dewatering benefit when aluminum sulfate and cationic polyacrylamide are blended together before use in dewatering sludges. The difference between claim 15 of the patent and pending claim 17 is ferric chloride. Per claim 17 and 21, it would have been obvious to have added ferric chloride to the composition prior to its addition to the digested sludge because Lees '767 teaches a synergistic dewatering benefit when ferric chloride and cationic polyacrylamide are blended together before use in dewatering sludges. Per claims 18 and 21, it would have been obvious to have added a combination of

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aluminum sulfate and ferric chloride to the cationic polyacrylamide per Lees col 6 lines 9 - 10.

Claims 19-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 15 of U.S. Patent No. 5846435 to Haase in view of USP 3472767 to Lees, as noted above, further in view of Sorensen '433. It would have been obvious to have selected DADMAC or epi-DMA as the polyquaternary ammonium compound in view of Sorensen '433 col 7 line 10 - 14.

USP 33642619 to Lo Sasso is cited for description of a synergistic benefit in using a blend of a cationic polyacrylamide and ferric chloride used to dewater municipal sewage sludge.



Chester T Barry

571-272-1152

**CHESTERT.T. BARRY**  
**PRIMARY EXAMINER**